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PATENT

Attorney Reference Number 3382-58659-01
Application Number 09/849,502

REMARKS

Claims 1-5, 7-11, 13-21, 23-27, and 30-33 are pending. The Applicants have canceled claims 6, 12, 22, 28, and 29 without prejudice.

The final Office action dated February 4, 2005 [“final Office action”], rejects claims 1-3, 5-9, 11-16, 18-20, 22-26, and 29-32 as being unpatentable over U.S. Patent No. 6,026,190 to Astle [“Astle”] in view of U.S. Patent No. 4,334,244 to Chan et al. [“Chan”] and Russ (“The Image Processing Handbook,” 2nd ed., CRC Press, 1994, pp. 164-66) [“Russ”]. The final Office action rejects claim 27 as being unpatentable over description of conventional lossy compression techniques at pages 2-3 of the application (which the Examiner terms “admitted prior art”) in view of Astle, Chan, and Russ. The final Office action rejects claim 10 as being unpatentable over the description of conventional lossy compression techniques at pages 2-3 of the application in view of Astle, Chan, and Russ. The final Office action rejects claims 4 and 21 as being unpatentable over Astle in view of Chan, Russ, and U.S. Patent No. 5,625,714 to Fukuda [“Fukuda”]. The final Office action rejects claim 17 as being unpatentable over Astle in view of Chan, Russ, and U.S. Patent No. 5,969,764 to Sun et al. [“Sun”]. The final Office action rejects claim 33 as being unpatentable over Astle in view of Chan, Russ, and U.S. Patent No. 6,556,925 to Mori et al. [“Mori”].

- 1) **The amendments to the claims should not require further consideration and/or search.**
With this Amendment After Final, the Applicants have amended claims 1, 9, 13, 18, 24, and 31.

The amendment to claim 1 adds language from its dependent claim 6 and strikes certain language objected to by the Examiner. Similarly, the amendment to claim 18 adds language from its dependent claim 22 and strikes certain language objected to by the Examiner. The amendment to claim 9 adds language from its dependent claim 12. Similarly, the amendment to claim 24 adds language from its dependent claim 31. The amendment to claim 13 adds the language “including filtering a prediction residual,” which should not require further consideration and/or search. The amendment to claim 31 corrects an informality noted by the Examiner.

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2) With the goal of reaching a shared understanding of the disclosure of Astle, the Applicants respectfully make the following observations.

Astle describes filtering before encoding of image signals. [See Astle, Abstract, Figure 3, 5:30-6:32.] Figure 3 shows the filter 303 before and outside of the encoder 304. The encoder 304 is described as including a transform such as a DCT as well as quantization. [Astle, 5:46-49.] Astle indicates that additional encoding processes (such as motion estimation or inter-frame coding) may be applied, but immediately suggests they would be performed at the encoder 304 stage, after the filtering 303. [Astle, 5:60-64.]

Consistent with this view, Astle describes applying a filter to the source image itself. "The low-pass filter means is applied at strength S to the image signal. [Astle, 2:36-37.] Later, Astle describes dividing a video image into 8x8 blocks, which are then filtered before encoding – "[l]owpass filter 303 ... is *then applied to each (8x8) block.*" [Astle, 5:42-46, emphasis added; *see also* 7:1-5, 10:46-49, and 11:32-39.] Astle states that the filter function can be performed even earlier, at the subsampling stage [*see* Astle, 10:52-54], which again involves application of the filter to the entire source image before encoding.

Similarly, Astle describe encoding as something that is done to the already filtered image. "The *filtered* image signal is encoded." [Astle, 2:37-39, emphasis added; *see also* 5:47-49 and 11:32-39.]

3) 35 U.S.C. § 112, ¶1 Written Description Rejections

The Examiner rejects claims 1-8, 18-23, and 30-33 as failing to comply with the written description requirement, due to the language "unweighted median filtering" and "unweighted kernel-based filtering" in the claims. [Final Office action, page 3.] Applicants respectfully disagree with this rejection. However, to place the claims in better condition for appeal, the term "unweighted" has been removed from the claims. Applicants respectfully submit that the previous §112, ¶1 rejections are moot, and ask that these rejections be removed.

4) 35 U.S.C. § 103 Rejections of Claims 1-3, 5, 7-9, 11, 13-16, 18-20, 23-26, and 30-32

Astle, Chan, and Russ, taken separately or in combination, fail to teach or suggest at least one limitation of each of claims 1-3, 5, 7-9, 11, 13-16, 18-20, 23-26, and 30-32.

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Claim 1, as amended, recites:

based at least in part upon the indicator value, adjusting median filtering of video information, wherein the median filtering the video information includes median filtering a prediction residual.

According to amended claim 1, median filtering of video information includes median filtering a prediction residual.

Claim 9, as amended, recites:

the applying the selected kernel to the video information includes applying the selected kernel to a prediction residual.

Claim 13, as amended, recites:

using the kernel to filter the set of video information, including filtering a prediction residual.

Claim 18, as amended, recites:

the filtering of the set of information includes filtering a prediction residual.

Claim 24, as amended, recites:

the filtering the information includes filtering intra-coded pixel data and prediction residuals.

Applicants respectfully submit that the art cited by the Examiner, taken separately or in combination, fails to teach or suggest the above-cited language of claims 1, 9, 13, 18, and 24, respectively.

Astle does not teach or suggest the above-cited language of claims 1, 9, 13, 18, and 24, respectively. In the final Office action, the Examiner notes that Astle describes "adjusting filtering strength prior [to] encoding." [Final Office action, page 8.] The Examiner also writes, "It is well known in the inter-frame encoding of video coding that a prediction residual is supplied to DCT transform." [Final Office action, page 5.]

Applicants agree that the filter in Astle is applied prior to encoding. This is clearly shown in FIG. 3, where the filter 303 is prior to the encoder 304, in Astle's description of filtering being applied

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to the source image (see section 2 for citations), and in Astle's description of encoding of an already filtered image (see section 2 for citations). Astle emphasizes that the filtering occurs prior to encoding by stating that the functions of the filter may be performed in the subsampling stage. [See Astle, 10:52-54.] In this sense, Astle does not teach or suggest the language of claims 1, 9, 13, 18, and 24, respectively.

Moreover, even if a prediction residual is supplied to a DCT in inter-frame encoding (as the Examiner contends), Astle still describes only filtering of images prior to encoding. In other words, to the extent Astle describes motion estimation and inter-frame coding, the filtering in Astle is still pre-processing applied to input frames, and the motion estimation or inter-frame coding is applied later to the filtered frames. (In the Astle framework, this would involve filtering to-be-intra-coded frames and to-be-inter-coded frames as input to the encoding, where the to-be-inter-coded frames are then inter-coded relative to reconstructed versions of earlier frames that were themselves filtered during pre-processing.) Astle leads directly away from the above-cited language of claims 1, 9, 13, 18, and 24, respectively. Furthermore, “[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.” (MPEP 2143.02.) In Astle, the filtering is done prior to the encoding step, as pre-processing. To place the filter after motion estimation or inter-frame encoding would change the principle of operation of Astle. [Astle, 11:46-55.]

Chan and Russ also fail to teach or suggest the above-cited language of claims 1, 9, 13, 18, and 24, respectively. As neither Astle, Russ, nor Chan teaches or suggests the above-cited language, claims 1, 9, 13, 18, and 24 should be allowable.

The combination of Astle, Chan, and Russ made by the Examiner is also inappropriate for *inter alia* the reasons that the earlier combination of Astle and Russ was inappropriate. In view of the foregoing remarks about claims 1, 9, 13, 18, and 24, however, the Applicants will not belabor the merits of this point.

In view of the foregoing remarks about claims 1, 9, 13, 18, and 24, the merits of the separate patentability of dependent claims 2, 3, 5, 7, 8, 11, 14-16, 19, 20, 23, 25, 26, and 30-32 are not belabored at this point. Claims 1-3, 5, 7-9, 11, 13-16, 18-20, 23-26, and 30-32 should be allowable. Such action is respectfully requested at this time.

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5) 35 U.S.C. § 103 Rejections of Claims 10 and 27

Astle, Chan, Russ, and the description of lossy compression techniques at pages 2-3 of the application, taken separately or in combination, fail to teach or suggest at least one limitation of each of claims 10 and 27.

Claim 10 depends from claim 9 and includes all of the language of claim 9. Claim 27 depends from claim 24 and includes all of the language of claim 24. As noted in section 4, Astle, Chan, and Russ, taken separately or in combination, fail to teach or suggest the above-cited language of claims 9 and 24, respectively. The description of lossy compression techniques at pages 2-3 of the application also fails to teach or suggest the above-cited language of claims 9 and 24, respectively.

The combination of references made by the Examiner to reject claims 10 and 27 is improper for at least the same reasons that the combination of Astle, Russ, and Chan is improper.

Claims 10 and 27 should be allowable.

6) 35 U.S.C. § 103 Rejections of Claims 4 and 21

Astle, Chan, Russ, and Fukuda, taken separately or in combination, fail to teach or suggest at least one limitation of each of claims 4 and 21.

Claim 4 depends from claim 1 and includes all of the language of claim 1. Claim 21 depends from claim 18 and includes all of the language of claim 18. As noted in section 4, Astle, Chan, and Russ, taken separately or in combination, fail to teach or suggest the above-cited language of claims 1 and 18, respectively. Fukuda also fails to teach or suggest the above-cited language of claims 1 and 18, respectively.

The combination of references made by the Examiner to reject claims 1 and 18 is improper for at least the same reasons that the combination of Astle, Russ, and Chan is improper.

Claims 4 and 21 should be allowable.

7) 35 U.S.C. § 103 Rejections of Claim 17

Astle, Chan, Russ, and Sun, taken separately or in combination, fail to teach or suggest at least one limitation of claim 17.

Claim 17 depends from claim 13 and includes all of the language of claim 13. As noted in section 4, Astle, Chan, and Russ, taken separately or in combination, fail to teach or suggest the above-

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cited language of claim 13. Sun also fails to teach or suggest the above-cited language of claim 13.

The combination of references made by the Examiner to reject claim 17 is improper for at least the same reasons that the combination of Astle, Russ, and Chan is improper.

Claim 17 should be allowable.

8) **35 U.S.C. § 103 Rejections of Claim 33**

Astle, Chan, Russ, and Mori, taken separately or in combination, fail to teach or suggest at least one limitation of claim 33.

Claim 33 depends from claim 1 and includes all of the language of claim 1. As noted in section 4, Astle, Chan, and Russ, taken separately or in combination, fail to teach or suggest the above-cited language of claim 1. Mori also fails to teach or suggest the above-cited language of claim 1.

The combination of references made by the Examiner to reject claim 33 is improper for at least the same reasons that the combination of Astle, Russ, and Chan is improper.

Claim 33 should be allowable.

CONCLUSION

Claims 1-5, 7-11, 13-21, 23-27, and 30-33 should be allowable. Such action is respectfully requested.

Respectfully submitted,

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